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(71) Applicants  
Locat Developments  
Limited,  
Wm. Wright Dock,  
Hull, HU3 4PG.

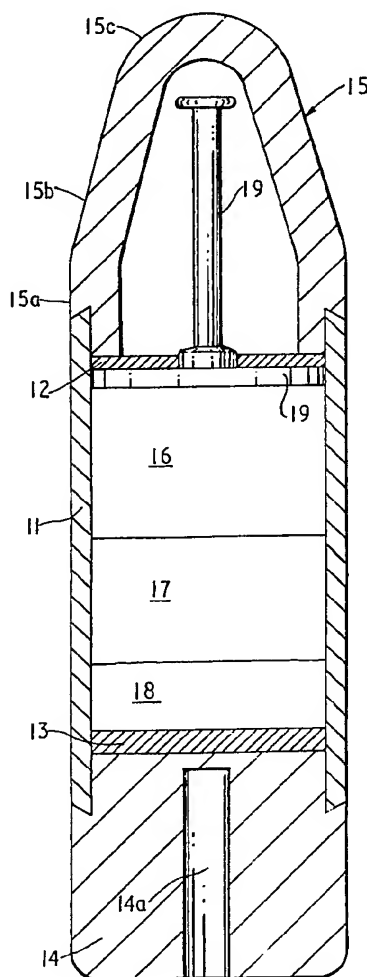
(72) Inventors  
Roy Dennison

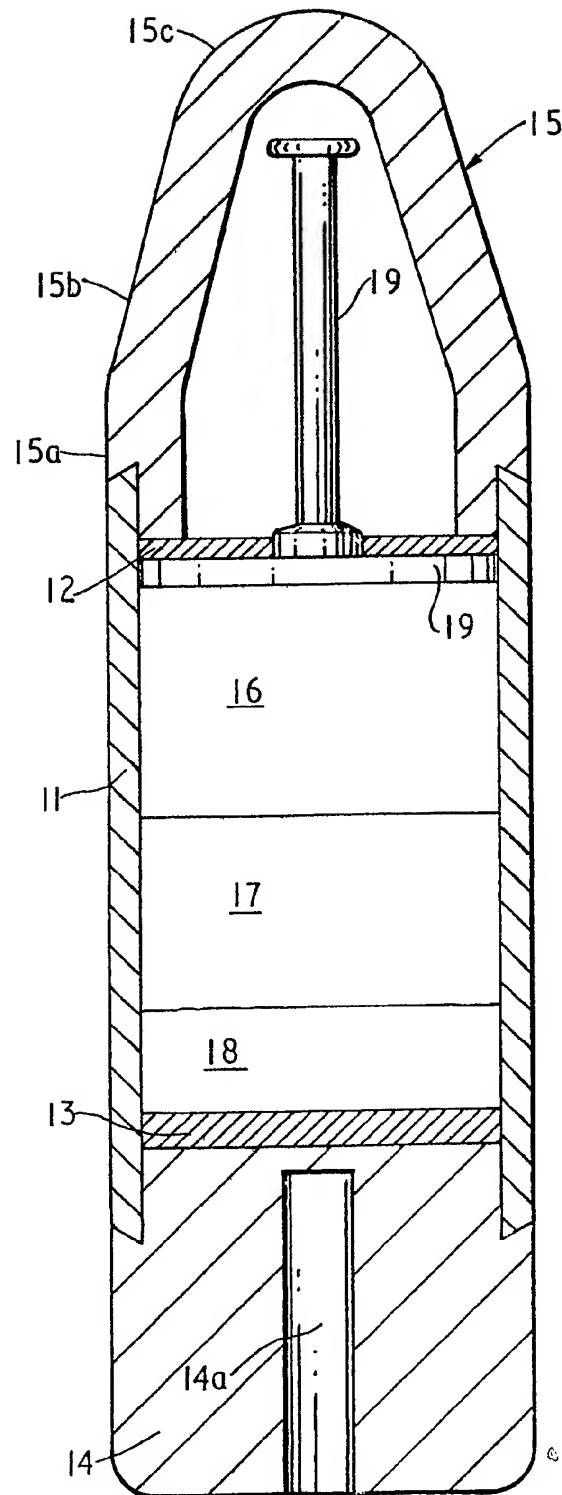
(74) Agents  
H.L. Cottrell & Co.

(54) Improvements in or relating to  
radio beacons

(57) The invention provides a radio  
distress beacon comprising a transmit-  
ter (16), a power source (17) for the  
transmitter (16), an antenna (19) and a

casing (11, 14, 15) enclosing the trans-  
mitter (16), the power source (17), and  
the antenna (19). The casing also in-  
cludes a switch (18) for automatically  
actuating the transmitter (16) when the  
beacon is released from its support  
means. The casing (11, 14, 15), by  
containing the antenna (19), protects  
the antenna (19) against accidental  
damage and, further, presents a  
smooth shape and configuration which  
is less readily snagged than conven-  
tional beacons.





## SPECIFICATION

### Improvements in or relating to radio beacons

5 This invention relates to radio beacons and more particularly to so-called "distress" beacons.

Radio beacons are well known in the art and conventionally comprise a transmitter, a power source for the transmitter, and an antenna for  
10 transmitting the transmitter signals.

Radio distress beacons are also well known in the art and, being portable, the transmitter and power source (conventionally one or more batteries) are both contained in a casing and the antenna extends  
15 through one wall of the casing to project therefrom. Such distress beacons as are carried by vessels are supported to be released and to initiate the transmission of distress signals automatically if the vessel should founder, thus to mark the site of the found-  
20 ered vessel and/or guide rescuers to the survivor location. Radio distress beacons may also be used for life rafts and the like survival aids and arranged for automatic release from or, to remain captive with, the survival aid.

25 The conventional radio distress beacons used for survival aids at sea or for automatic release from foundering vessels suffer from three major defects as follows:-

1. The beacon is the wrong shape in that with the  
30 antenna projecting from the casing, the beacon is easily snagged on parts of the foundering vessel, particularly rigging, and can go down with the vessel.

2. The antenna is susceptible to damage by  
35 engagement with the vessel or flotsam in the vicinity of the vessel, or, in the case of a survival aid, by engagement with the survival aid.

3. It is difficult to maintain a seal effective against  
40 sea water, at the junction of the antenna with the casing particularly if the antenna is struck by, or strikes, the vessel, flotsam in the vicinity of the vessel, or the survival aid.

The present invention seeks to provide a radio distress beacon which is more robust and less likely  
45 to damage than conventional beacons.

Accordingly to the present invention there is provided a radio distress beacon comprising a transmitter, a power source for the transmitter, an antenna, a casing enclosing said transmitter, power  
50 source, and antenna.

Thus, by enclosing the antenna within a casing, the antenna is protected against damage by contact and the casing can provide a smooth shape and configuration which is less readily snagged than  
55 conventional beacons.

Preferably the casing is of cylindrical configuration with the antenna extending axially therein and towards one end thereof.

Preferably that end of the casing including the  
60 antenna is of tapered form, reducing towards its adjacent end, and conveniently the extreme end of the casing is of hemispherical configuration.

Preferably the casing is in two parts, one part totally enclosing the transmitter and power unit and  
65 the other part enclosing the antenna.

In one embodiment in accordance with the invention that casing part enclosing the antenna is detachable to permit a telescopic antenna within the casing to be extended.

70 The invention will now be described further by way of example with reference to the accompanying drawings in which the single figure shows an axial cross section through a radio distress beacon.

The beacon shown in the drawings generally  
75 comprises a cylindrical casing part 11 closed at its ends by walls 12 and 13, a base casing part 14 with a blind axially extending recess 14a therein and a top casing part 15. The casing parts 14 and 15 are concentric with casing part 11 and rigidly sealed  
80 thereto.

The casing part 11 contains a transmitter, generally indicated by numeral 16, a power source, generally indicated by numeral 17, and a switch 18 which automatically switches transmitter 16 to a transmitting condition in the absence of a magnetic field.  
85

The end walls 12 and 13 totally seal the ends of casing part 11 to isolate the transmitter 16, power source 17 and switch 18 within casing part 11 from the surrounding environment and an antenna 19  
90 extends through end wall 12 into the hollow interior of casing part 15.

The casing part 11, base part 14 and top part 15 are conveniently made from a plastics material, such as polyvinylchloride. The top part 15 extends from a  
95 cylindrical section 15a adjacent part 14 as a conical section 15b towards a hemispherical end section 15c so that said part 15 has a "bullet" or "shell" configuration.

The beacon illustrated is totally sealed and pressure resistant so that it is particularly suitable for  
100 release from locations beneath the sea and may, for example, be used for submarine escape survival aids.

When used in a submarine role the beacon is  
105 located within an open ended tube, opening upwardly, and a magnetic pin (not shown) anchored to the lower regions of the tube is located in bore 14a and effective to maintain the magnetic switch 18 in a "no-transmission" condition. The open ended tube  
110 may be located in the escape chamber or in some other part of the vessel to release the beacon when the escape chamber is opened to permit personnel therein to leave the vessel.

As the beacon releases from the tube, by its  
115 buoyancy when the tube is immersed in water, the beacon floats off the magnetic pin, thus to allow the magnetic switch 18 to activate a transmitting condition, and the beacon will then rise through the water to the surface where, due to the buoyancy balance,  
120 the beacon floats with the casing part 15 above the water and the transmitter 16 transmitting the distress/location signal.

The beacon may release to float freely from the vessel or the beacon may be attached to a survival  
125 aid of a person, so as to remain captive with the survival aid.

It will be observed that the beacon described above and presenting a "bullet" or shell-like configuration is difficult to snag and with the end 15c  
130 leading, the beacon can successfully thread its way

upwardly even through complexed rigging of the submerged vessel.

Further, as the antenna is wholly contained within the casing and isolated from the surrounding environment the joint between the antenna 19 and end wall 12 is fully protected against sea water.

Whilst the present invention has been described by way of example with reference to a specific embodiment the invention is not restricted thereto and many modifications and variations will be apparent to persons skilled in the art.

#### CLAIMS

1. A radio distress beacon comprising a transmitter, a power source for the transmitter, an antenna, and a casing enclosing said transmitter, said power source, and said antenna.

2. A radio distress beacon as claimed in claim 1 in which said casing comprises a cylindrical body part with end parts extending generally axially therefrom.

3. A radio distress beacon as claimed in claim 2 in which said cylindrical body part is defined by a cylindrical metal member.

4. A radio distress beacon as claimed in claim 2 or 3 in which said end parts comprise moulded plastics material.

5. A radio distress beacon as claimed in claim 2, 3 or 4 in which said transmitter and said power source are contained within said cylindrical body part.

6. A radio distress beacon as claimed in claim 2, 3, 4 or 5 in which the antenna extends axially from said cylindrical body part into one of said end parts.

7. A radio distress beacon as claimed in claim 6 in which the antenna-containing end part has a generally conical configuration and reduces in cross section from that end adjacent the cylindrical body part to a hemispherical end remote from said cylindrical body part.

8. A radio distress beacon as claimed in claim 7 in which the casing includes an internal wall which isolates the interior of the cylindrical body part from the interior of the antenna containing end part and said antenna extends through said internal wall.

9. A radio distress beacon as claimed in claim 6 or 7 in which the antenna-containing end part is separable from the cylindrical body part.

10. A radio distress beacon as claimed in claim 9 in which the antenna is extensible and is in a contracted condition when the antenna-containing end part is assembled with the cylindrical body part.

11. A radio distress beacon as claimed in any one of claims 2 to 10 inclusive in which one of said end parts comprises a base for the beacon and said base is adapted to co-operate with a support for the beacon.

12. A radio distress beacon as claimed in claim 11 in which said base part includes an axially extending recess intended to receive a pin presented by the support means for the beacon.

13. A radio distress beacon as claimed in any preceding claim in which the casing includes a switch for actuating the transmitter when the beacon

is released.

14. A radio distress beacon as claimed in claim 13 in which said switch is adapted to remain inoperative within a magnetic field and to operate the transmitter when released from said magnetic field.

15. A radio distress beacon as claimed in claim 14 in combination with a support for the beacon, said support means including a magnetic field generating means capable of maintaining said switch inoperative whilst the beacon is supported by said support means.

16. A radio distress beacon substantially as hereinbefore described with reference to and as illustrated in the accompanying drawings.

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